

**A Supplement to the
Fauna and Flora of Horn Island,
Mississippi**

by

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Figure 1. *Panicum amarum* Elliott — Bitter Grass



Figure 2. *Uniola paniculata* Linnaeus — Sea Oats



Figure 3. From Sound (Section 18)



Figure 4. Looking West from Section 24

I. INTRODUCTION

Since the publication of "The Fauna and Flora of Horn Island, Mississippi" (Richmond 1962) search for unrecorded species present on this island, or in the waters surrounding it, has been continuing by myself and others. The premise that all of the plants and animals living in a given area can never be located completely is naturally well-founded. However, it seems advisable to continue the search for unlisted species of Horn Island.

Many unrecorded specimens have been collected and it seems proper at this time to make a supplementary list available to the public, particularly those interested in fields of science and nature. Knowing what is present on the island doubtless will tend to stimulate biological studies in various fields of endeavor.

The card catalogues of the Gulf Coast Research Laboratory Museum have been carefully examined by me through the courtesy of Mr. C. E. Dawson, Curator. Dr. Gordon Gunter kindly made some of his unpublished data of 1956 and 1957 available. Many visits to Horn Island have been made by the writer and others. In fact all members or students from the Laboratory have contributed in some way or other and, when known, credit is given to each one. The new contributors since the issue of my 1962 paper include W. I. Anderson, recently deceased, of the Shearwater Pottery Company. His expert knowledge of bird life has been especially helpful. David Peterson, manager of the Gulf Island National Wildlife Refuges since he replaced John H. Walther, K. E. Myers and Jerry E. Blackard, respectively managers of previous years, has been extremely cooperative. Frank Carroll, who has been associated with these managers, has assisted me materially. Marvin Phillips, formerly with the United States Army and stationed on the island, accompanied me on many trips during 1944 and 1945.

As usual, the facilities of Cornell University, the Academy of Natural Sciences of Philadelphia, the United States National Museum and the American Museum of Natural History have been available to me for identification. W. J. Gertsch of the American Museum identified the spiders. T. E. Bowman (United States National Museum), has checked a number of crustaceans as has Douglas Farrell of the Gulf Coast Research Laboratory. R. B. Channell (Vanderbilt University), Roland M. Harper (Alabama University) recently deceased, and E. T. Wherry (University of Pennsylvania) verified the names of many plants. Dr. Harper reports that *Pinus clausa* (Engelm.) Vasey, the spruce-pine of Florida, although present in Alabama, is otherwise restricted to Florida. A single specimen is growing on Horn Island according to Dr. Channell and is listed in my original paper (1962). Dr. Harper stated in 1928 that *Pinus clausa* is confined to the stationary dunes of pure white sand on the coast of Baldwin County, Alabama. There is no doubt that many of the plants originally established on Horn Island have disappeared and also that many others are constantly getting a foothold there. For instance, the cypress has gone and the chinaberry tree has arrived.

Again credit is extended to the specialists who kindly gave their time to verify or name the species contained in the lists given in

Chapter IV. My 1962 paper thanked many too briefly but I will not repeat the entire list. Many additional specialists have been interviewed and their courtesy is appreciated. Included are the following scientists: W. A. Connell, D. R. Davis, R. C. Froeschner, J. L. Herring, R. W. Hodges, J. M. Kingsolver, T. J. Spilman and Richard E. White of the United States National Museum; M. D. Leonard, retired, formerly with the Shell Oil Company; Miss E. Van Tassell (formerly at Catholic University, Washington, D. C.); Robert C. Graves (Bowling Green State University, Ohio) and L. L. Pechuman (Insect Curator, Cornell University).

Henry Yost, deceased, and J. Cowger of the Pest Control Laboratory, United States Department of Agriculture, at Gulfport, Mississippi, gave me some supplies and valuable suggestions. My retired friend, Henry Dietrich, former Curator of Entomology at Cornell University, identified many beetles, especially carabids. James E. Böhlke checked my determinations of a number of fresh water fishes. Leona W. Richmond typed most of my preliminary notes and took some very excellent photographs in connection with this study.

James S. Franks of the University of Mississippi and the Gulf Coast Research Laboratory has collected the fishes of the lagoons and ponds of Horn Island through the courtesy of the Fish and Wildlife Service of the U. S. Department of the Interior. He was aided financially by a modest N. S. F. grant obtained by the Gulf Coast Research Laboratory. A number of species, recently collected by him, have been added to my original list.

Dr. A. E. Schuyler helped particularly in the accurate determination of the sedges. H. W. Wilkens of Reading, Pennsylvania, called my attention to several plants not previously listed. Wilkens, visiting the Gulf Coast Research Laboratory in the spring and fall of 1965, did some collecting on the mainland but did not go to Horn Island. He reports that Richard L. Diener, formerly of Keesler Air Force Base, collected fifteen specimens on the island. Some of his specimens were not previously listed. E. P. Bicknell (1899) and E. E. Sherff (1933) each described a new species of plant from Horn Island. The species were collected by S. M. Tracy. As yet, I have not located *Coreopsis corninsularis* Sherff.

II. DESCRIPTION OF THE ISLAND

Horn Island is briefly described by Richmond (1962). As is well known, its conformity is constantly changing. This is particularly noticeable along the shoreline and from the changes in the shape and size of the lagoons and ponds. Evidently the southeastern portion is losing its foundation to the Gulf, whereas the northwestern area is gradually building up. This is in keeping with Richard R. Priddy's (1965) premise that the changes are due to the Mississippi River's power to move the barrier islands by "long shore" currents. These currents discharge southeastward and are diverted northward towards the islands and then westward. The result, he states, is that the islands are moving westward and to some extent southward.

The strong root system of the slash pine holds the central region (East and West) more or less in a stable equilibrium. Wax myrtle, yaupon, groundsel, rosemary, bitter beachgrass (Fig. 1) and sea oats (Fig. 2) doubtless have helped materially.

The dunes on the south side took a terrific beating in the fall of 1965. An attempt had been made by the Fish and Wildlife Service management to anchor those areas by bulldozing the sand into seemingly protective dunes. It was hoped that such a method, together with the use of winter fences (Fig. 5) would tend to alleviate the onslaught of the wind and Gulf waters. No real success was attained and the southern shore area was definitely flattened (Fig. 6). Most of the higher natural dunes held fast. LaGorce (1915) writes most interestingly about the ravages created by the Atlantic Ocean on our eastern coast.

During the passage of hurricane Betsy, heavy rains fell on lower Mississippi from the ninth to twelfth of September 1965. This rain, coupled with winds varying from 70 to 90 miles per hour, caused much shifting of the sands and the recently constructed dunes were leveled off. Raccoons, deer and other animals from all the islands were drowned and a number were washed up on the shore of the mainland. Much miscellaneous debris was dumped on the island. Tropical sea-bean seeds and a ten-foot palm tree bole were found near the area of the former army barracks.

The late W. I. Anderson, who was a well-known naturalist, artist and one of the owners of the Shearwater Pottery of Ocean Springs, attained one of his lifelong ambitions when he weathered this hurricane. He was wont to frequent the island for weeks at a time, as he communed in solitude with nature. Many ideas, emanating from his observations, were used in his pottery designs. At the time that Betsy was on a rampage, he was camping on his favorite so-called abode. When the water rose to his armpits, he tied the painter of his small boat about his waist and moved away from the rising waters to a higher level on one of the larger dunes. Darkness fell and he spent the night and following day safely in the leeward of the higher dunes until the storm abated. He saw his favorite pig washed away and drowned.

On 10 July 1966, an exhibition of some of Anderson's paintings of Horn Island scenes, plants and animals was staged at a motel in Pascagoula, Mississippi.

The tropical storm Debbie left a record of 16.85 inches of rainfall in downtown Mobile on September 29th and 30th of 1965. I have no information of its effect on Horn Island.

III. HISTORICAL DATA

Although Claiborne (1880) did not write about Horn Island, he did write quite extensively concerning Dauphin Island and Ship Island, which lie very close to Horn. Unfortunately his Volume II was destroyed by fire.

Guyton (1952) in a school textbook entitled "Our Mississippi" tells about Pierre LeMoyne d'Iberville's journey from France via Santo Domingo to Ship Island. On February 10, 1699, the expedition arrived. There, they were met by friendly Biloxi Indians. The Biloxis informed d'Iberville relative to a "near-by" mainland and especially about a large river to the west. Leaving his fleet anchored, he and his younger brother, Bienville, toured the coast and located the Mississippi River. Later they returned to Ship Island and at Old Biloxi (Ocean Springs) built Fort Maurepas on April 8, 1699. My previous paper (1962) states that Indians stayed "close to the mainland." Such is evidently incorrect in view of the presence of the Biloxis on Ship. Since the Gulf islands were separated only by relatively narrow expanses of water, it seems very likely that the Indians did roam on Horn. However, no evidence has been revealed concerning such peregrinations. As Thompson (1964) stated, "Horn Island is a blurred page in history." In 1965 Thompson again wrote about Horn Island and used some illustrations. The lighthouse, which was washed away in 1906, was pictured. Another unmanned lighthouse was erected on the north side of Petit Bois. The Pascagoula and Moss Point Chronicle (1965) published an interesting article about these lighthouses.

Since 1945, all military buildings noted in my first paper have been removed or destroyed by the weather elements. Only the power-house chimney in the operations area remains standing. In 1963 the Fish and Wildlife Service erected a 20 x 40 feet crew cabin on Horn Island near the area where the former headquarters of the military establishment was located during World War II. This cabin was erected six feet above a concrete flooring which supports the beams of the building. In 1965, a garage with a storeroom was built to house the vehicles and to supply extra storage space.

Transportation to and from the Island was made available by the Gulf Coast Research Laboratory or the Fish and Wildlife Service. The Laboratory trawler, HERMES, and the 30-foot SKIMMER of the Wildlife Service were used. Travel on the island was made on foot or by a Refugees jeep.

IV. ANIMAL AND PLANT LISTS

"There is not a property in nature but a mind is born to seek and find it, for it is not the plants or the animals, innumerable as they are, nor the whole magazine of material nature that give the sum power, but the infinite applicability

of these things in the hands of thinking man, every new application being equivalent to a new material."

—R. W. Emerson (1879) 1891

As in my 1962 paper, the species listed include only those animals and plants which were actually collected or sighted on Horn Island or in the waters around it out to a few fathoms of depth. The listings herein include only the records acquired from 1962 to 1966 inclusive.

A black-light trap was used occasionally instead of a New Jersey light trap for taking insects. However, its use did not prove entirely satisfactory. Hand-nets, pans, picking up and cupping proved more successful. In 1963, Kent Meyer ran the trap for several days during early April and two lots of collections were forwarded to me. An immediate kill was not obtained and most of the more delicate insects were ruined beyond identification. Cyanide was used as the killing agent. One other collection was made by Jerry Blackard on 14 April 1965. Ethyl acetate was used as the killing agent and the results proved more successful. Due to various climatic and labor difficulties, no further runs were made until June 1966. Now the use of 70% isopropyl alcohol and ethyl acetate keeps the collection in better shape.

The observance of a Barn Owl and the Coypu (Nutria) on the island in 1966 was called to my attention by David Peterson, J. S. Franks and others. Tracks of the River Otter were reported by Boyd Kynard and the otter is apparently quite common although I do not list it. Just when these animals moved in is not known. W. I. Anderson saw animals on drifting logs, boxes, etc. from time to time. Bond (1966) briefly discusses the transportation of small animals, invertebrates and birds by vegetative rafts on ocean waters. Hogs raised on the island before 1940 are still present. Trapping has reduced them somewhat.

Ruby-throated hummingbirds migrated through the Island in the Spring of 1964. They were very numerous and for a number of days fed quite commonly on purple thistle. In 1965, I arrived at the island very early in hopes of seeing their activity but no such migration occurred. None were reported in 1966. The nests of the Brown Pelicans on the North Islands were seriously depleted by adverse weather conditions in 1960 but lately the species appears to be on the increase. Several flocks were observed in 1966 and a colony of more than one hundred were seen using a group of spoil bank islands in the Sound just south of Pascagoula. However, their present nesting place is unknown.

A number of recently collected plants have been given to the Academy of Sciences in Philadelphia, as well as to the Bailey Hortorium of Ithaca, New York.

Aside from standard books and texts, publications by the following authors and institutions have been helpful in the studies of the animals and plants encountered in the Southern Mississippi area—Jenkins (1933), Behre (1950), Radford, Ahles and Bell (1964), Ralph Smith *et al.* (1964), Taylor (1960) and Williams (1964). Attention should be called to Richard Lane's (1957) excellent presentation of the history and activities of the Gulf Coast Research Laboratory.

No concentrated effort has been made to consider the protozoans, algae, mosses or ferns but some algae and ferns are listed. Humm and Caylor (1957) wrote extensively on the "Summer Marine Flora of Mississippi Sound" but nothing was specifically collected near Horn Island. F. Drouet of the Academy of Natural Sciences of Philadelphia identified several species of algae.

R. B. Channell's manuscript on "Vegetation of the West End of Horn Island" was most interesting and helpful to me and to members of the teaching staff at the Laboratory. He has also collected many species of algae on trips to Horn Island with his classes during recent years and has kindly given me their names. These species are listed.

Pictures in this paper will perhaps give the reader a broader vision of the plants and characteristic scenes encountered on Horn Island (Figs. 1-12).

An examination of Table No. 1 shows 1,568 species of plants and animals collected and identified from 1944 through 1966, 468 species since 1961. Naturally the insects predominate in numbers (712 species). The fishes follow with 156 species. Two hundred four species of plants are recorded.

TABLE 1
Number of Identified Members of the Fauna and Flora
Horn Island Records (1944-1966)

| ANIMAL PHYLA AND MAJOR SUBDIVISIONS | FAMILIES | GENERA | SPECIES |
|--|----------|--------|---------|
| Lower Invertebrates (through Annelida) | 28 | 30 | 30 |
| Mollusca | 56 | 88 | 110 |
| Arthropoda (Classes) | | | |
| Merostomata | 1 | 1 | 1 |
| Crustacea | 46 | 71 | 94 |
| Myriapoda | 1 | 1 | 1 |
| Insecta | 157 | 478 | 712 |
| Arachnida | 15 | 24 | 28 |
| Echinodermata | 6 | 8 | 11 |
| Prosopygia | 1 | 1 | 1 |
| Enteropneusta | 1 | 1 | 1 |
| Urochorda | 1 | 1 | 1 |
| Cephalochorda | 1 | 1 | 1 |
| Craniata (Classes) | | | |
| Pisces | 64 | 114 | 156 |
| Amphibia | 2 | 5 | 10 |
| Reptilia | 10 | 16 | 23 |
| Aves | 38 | 131 | 176 |
| Mammalia | 6 | 6 | 8 |
| Animals | 434 | 977 | 1364 |
| Plants | 77 | 147 | 204 |
| Total Collections | 511 | 1124 | 1568 |

FAUNA

Phylum COELENTERATA

Class Hydromedusae

Hydractinidae

⁵*Hydractinia echinata* Fleming Spiny Polymorphic Hydroid

Class Scyphomedusae

Pelagidae

⁵*Chrysaora quinquecirrha* Desor Jellyfish

Rhizophysaliidae

Physalia pelagica Bosc Portuguese Man-of-War

Phylum PLATYHELMINTHES — Flatworms

Class Turbellaria — Planarians

Bdellouridae

Bdelloura candida (Girard) Planaria

Phylum ANNELIDA — Segmented Worms

Class Chaetopoda

Chaetopteridae

⁵*Chaetopterus* sp.

Megascolecidae

Pontedrilus bermudensis Beddard

Class Hirudinea — Leeches

Piscicolidae

Myzobdella lugubris Leidy Leech

Phylum MOLLUSCA — Mollusks

Class Pelecypoda — Clams

Teredinidae — Ship Worms

⁵*Teredo* sp. Ship Worm

Order Nudibranchia

Corambidae

Corambella baratariae Harry Barataria Nudibranch

Dorididae

Doris verrucosa Linnaeus Verucose Slug

Class Gastropoda — Snails (Univalves)

Fissurellidae

Diadora cayenensis Lamarck Cayenne Keyhole Limpet

Vitrinellidae

Cyclostremella humilis Bush Humble Cyclostremella

Melongenidae — Large Whelks

⁶*Busycon contrarium*

Strombidae

Strombus alatus Gmelin Florida Fighting Conch

Class Cephalopoda — Cuttlefishes

Loliginidae

Doryteuthis plei (de Blainville) Squid

Loligo pealei LeSueur Peale's Squid

Lolliguncula brevis de Blainville Short Squid

Phylum ARTHROPODA — Segmented Animals

Class Crustacea — Crustaceans

Subclass Copepoda

Clausidiidae

⁴*Clausidium* sp.

Lernaeidae

Lernaenicus radiatus (LeSueur)

Pontellidae

¹*Anomalocera ornata* Sutcliffe

Subclass Cirripedia

Lepadidae

¹*Lepas anatifera* Linnaeus Goose Barnacle

¹*Lepas pectinata* Spengler Pectinate Goose Barnacle

Subclass Malacostraca

Order Amphipoda

Ampeliscidae

Ampelisca holmesi Pearse

Ampithoidae

³*Ampithoe longimanus* Smith

Cymadusa filosa Savigny

Atylidae

Atylus minikai (A. C. Walker)

³*Atylus* sp.

Bateidae

³*Batea* sp.

Caprellidae

Caprella carolinensis Mayer

Carolina Caprella

³*Hemiaegena minuta* Mayer

Corophiidae

³*Corophium acherusicum* Costa

³*Erithonius brasiliensis* (Dana)



Figure 5. Winter fences before hurricane (Gulf side)



Figure 6. Winter fences after hurricane (Gulf side)

| | | |
|--|----------|---------------------|
| <i>Gammaridae</i> | | |
| <i>Carinogammarus mucronatus</i> (Say) | | |
| <i>Haustoriidae</i> | | |
| ³ <i>Haustorius mexicanus</i> Bousfield | | |
| <i>Oedicerotidae</i> | | |
| ³ <i>Monoculodes edwardsi</i> Holmes | | |
| <i>Photidae</i> | | |
| ³ <i>Microprotopus raneyi</i> Wigley | | |
| <i>Talitridae</i> — Sandfleas | | |
| ³ <i>Orchestia grillus</i> (Bosc) | | |
| ³ <i>Orchestia platensis</i> Krøyer | | |
| ³ <i>Talorchestia</i> sp. No. 1 | | |
| ³ <i>Talorchestia</i> sp. No. 2 | | |
| Order Isopoda | | |
| <i>Cymothoidae</i> | | |
| <i>Livoneca ovalis</i> (Say) | | |
| <i>Idotheidae</i> | | |
| <i>Erichsonella attenuata</i> (Harger) | | |
| <i>Sphaeromidae</i> | | |
| <i>Ancinus depressus</i> (Say) | | |
| Order Stomatopoda | | |
| <i>Squillidae</i> | | |
| <i>Lysiosquilla excavatrix</i> Brooks | | Mantis Shrimp |
| <i>Lysiosquilla scabricauda</i> (Lamarck) | | Mantis Shrimp |
| Order Decapoda | | |
| Suborder Macrura | | |
| <i>Alpheidae</i> — Snapping Shrimp | | |
| ⁵ <i>Crangon</i> (<i>Alpheus</i>) <i>heterochelis</i> (Say) | | |
| <i>Hippolytidae</i> | | |
| <i>Hippolyte zostericola</i> (Smith) | | Eel-Grass Shrimp |
| <i>Tozeuma carolinense</i> Kingsley | Carolina | Eel-Grass Shrimp |
| <i>Palaemonidae</i> | | |
| <i>Palaemonetes vulgaris</i> Say | | Common Grass Shrimp |
| <i>Penaeidae</i> | | |
| ⁵ <i>Trachypeneus constrictus</i> (Stimpson) | | |
| <i>Ogyrididae</i> | | |
| <i>Ogyrides alphaerostis</i> (Kingsley) | | Ogyrides |
| <i>Processidae</i> | | |
| <i>Processa</i> sp. | | Processa |
| Suborder Brachyura | | |
| <i>Calappidae</i> | | |
| <i>Calappa sulcata</i> Rathbun | | Box Crab |

| | | |
|--|--------------|-----------------------|
| <i>Grapsidae</i> | | |
| ⁶ <i>Sesarma cinereum</i> (Bosc) | | Wharf Crab |
| <i>Majidae</i> (Maidae) | | |
| ¹ <i>Metoporphaphis calcarata</i> (Say) | "Calcareous" | Spider Crab |
| <i>Portunidae</i> | | |
| <i>Ovalipes quadulpensis</i> (de Saussure) | | Lady Crab |
| ¹ <i>Portunus gibbesii</i> (Stimpson) | | Swimming Crab |
| <i>Xanthidae</i> | | |
| <i>Panopeus herbstii</i> (H. Milne Edwards) | | Herbst's Mud Crab |
| ⁵ <i>Panopeus</i> sp. | | Mud Crab |
| Suborder Anomura | | |
| <i>Albuneidae</i> | | |
| <i>Albunea gibbesii</i> (Stimpson) | | Sand Crab |
| <i>Lepidopa benedicti</i> Schmitt | | Sand Crab |
| <i>Callianassidae</i> | | |
| <i>Callianassa islagrande</i> Schmitt | | Grand Isle Calianassa |
| <i>Paguridae</i> | | |
| <i>Clibanarius vittatus</i> (Bosc) | | Striped Hermit Crab |
| <i>Paguristes hummi</i> Wass | | Hermit Crab |
| <i>Pagurus impressus</i> (Benedict) | | Impressed Hermit Crab |
| <i>Petrochirus bahamensis</i> (Herbst) | | Red Hermit Crab |
| <i>Porcellanidae</i> | | |
| <i>Polyonyx gibbesi</i> (Haig) | | Gibb's Polyonyx |

¹Species collected by E. A. Richmond (1962-1966); ²H. J. Bennett;
³Douglas Farrell; ⁴Philip J. Phillips; ⁵Gordon Gunter—unpublished
data; ⁶David Peterson. Remainder taken from a Gulf Coast Research
Laboratory list.

CLASS INSECTA (HEXAPODA) — INSECTS

Odonata — Dragonflies, Damselflies

Lestidae

Lestes sp.

Libellulidae

Tarnetrum corruptum Hagen

Orthoptera — Grasshoppers, Crickets, Roaches, et al.

Gryllidae

Nemobius fasciatus (DeG.)

Hemiptera — True Bugs

Coreidae

Alydus pilosulus (Herrich-Schaeffer)

Hydrometridae

Hydrometra martini Kirkaldy

Lygaeidae
Pachybrachius servillei (Guerin)
Miridae
Psallus seriatus (Reuter)
Nepidae
Ranatra australis Hungerford
Notonectidae
Notonecta indica Linnaeus
Pentatomidae
Banasa dimidiata (Say)
Reduviidae
Rasahus hamatus (Fab.)
Homoptera — Aphids, Leafhoppers, et al.
Acanaloniidae
Acanalonia latifrons (Walker)
Aphidiidae
Aphis gossypii Glover
Prociphilus sp.
Cercopidae
Prosapia bicincta (Say)
Cicadellidae
Draeculacephala bradleyi Van Duzee
Draeculacephala portola Ball
Draeculacephala producta (Walker)
Tylozygus fasciatus (Walker)
Flatidae
Ormenoides venusta (Melichar)
Membracidae
Cyrtolobus tuberosa (Fairmaire)
Spissistilus festinus (Say)
Neuroptera — Lacewing-flies, antlions, et al.
Ascalaphidae
Ululodes hageni Weele
Chrysopidae
Chrysopa oculata Say
Myrmeleontidae
Paranthaclisis hageni (Bks)
Lepidoptera — Butterflies, moths, skippers
Suborder Heterocera, Superfamily Noctuoidea
Arctiidae — Tiger Moths
Apantesis nais Drury

Diacrisia virginica (Fab.)
Hyphantria cunea (Drury)
 Eucleidae — Slug Caterpillars
Euclea sp.
Sibine stimulea Clem.
 Olethreutidae
Bactra verutana verutana Zeller
 Phalaenidae (Noctuidae) — Noctuids
Acronicta tritona (Hbn.)
Euagrotis sp.
Euthisanotia unio Hbn.
Feltia subterranea (Fab.)
Leucania sp.
Orthodes crenulata Bth.
Tarachidia candefacta (Hbn)
 Geometridae — Geometrids
Semiothisa sp.
 Megalopygidae
Lagoa crispata Packard
 Pyrallidae
Diatraea sp.
Nomaphila noctuella (D. & G.)
 Gelechiidae
Aroga coloradella (Bsk.)
Dichomeris ligulella (Hbn.)
Filatima sp.
 Blastobasidae
Holcocera sp.
 Yponomeutidae
Atteva punctella (Cramer)
 Diptera — Flies, Mosquitoes
 Bibionidae
Philia orbata (Osten Sacken)
 Bombyliidae
Anthrax tigrina (DeGeer)
 Ceratopogonidae
Atrichopogon sp. (complex)
 Chironomidae
Chironomus sp.
 Dolichopodidae
Condyllostylus chrysoprasi (Walker)

Ephydridae

Dimecoenia spinosa (Loew.)

Setacea sp.

Sciomyzidae

Pherbellia nana (Fallen)

Stratiomyidae

Hermetia illucens (Linnaeus)

Tachinidae

Archytas apicifer (Walker)

Sitophaga sp.

Therevidae

Furcifera sp.

Coleoptera — Beetles

Alleculidae

Hymenorus densus LeConte

Hymenorus distinctus Fall

Anobiidae

Ernobius granulatus LeConte

Petalium seriatum Fall

Tricorynus sp. nr. *gravis* LeConte

Anthicidae

Tomoderus sp.

Vacusus laetus Laf.

Bostrichidae

Amphicerus cornutus Pallus

Lichenophanes armiger (LeConte)

Stephanopachys rugosus (Olivier)

Buprestidae

Taphrocerus sp.

Taphrocerus schaefferi Nic. and Weiss

Byrrhidae

Limnichites sp.

Carabidae

Agonoderus lineola (Fab.)

Agonoderus partiaris Say

Agonoderus pauperculus Dej.

Agonum cincticollis Say

Bembidion contractum Say

Bradycellus rupestris Say

Chlaenius laticollis Say

Chlaenius niger Rand.

Dyschirius erythrocerus Lec.

Euphorticus pubescens Dej.
Loxandrus sp.
Selonophorus sp.
Tachys sp.
Tetragonoderus fasciatus Hald.

Cerambycidae

Arhopalus rusticus nubilus (LeConte)
Leptostylus sp. (probably *knulli* Fisher)

Chrysomelidae

Altica amoena Horn
Altica chalybea Illiger
Altica rufa Illiger
Chrysomela scripta Fab.
Graphops curtipennis Melsh.
Lema trilineata Olivier
Rhadiopterus sp.
Strabala rufa (Illiger)

Cicindelidae

Cicindela hamata lacerata Chd.
Cicindela hamata monti Vaurie

Coccinellidae

Ceratomegilla maculata DeGeer (*Coleomegilla maculata fus-*
 cilabris Muls. = an aberration)
Chilocorus cacti Linnaeus
Chilocorus tripustulatus DeGeer
Hyperaspis signata Olivier

Colydiidae

Bothrideres geminatus (Say)

Cucujidae

Ahasverus rectus (DeGeer)

Curculionidae

Anthonomus sp.
Baris sp.
Hyperodes sp.
Listronotus blandus Henderson
Perigaster obscura LeConte
Sphenophorus necydaleides (Fab.)

Dytiscidae

Bidessus sp.
Copelatus glyphicus (Say)
Desmopachria grana (LeConte)

Elateridae

Blauta cribraria (Germar)
Conoderus amplicollis (Gyll.)
Conoderus falli Lane
Glyphonyx sp.
Hemicrepidius decolorata Say
Ischiodontus soleatus (Say)
Ischiodontus schwarzi Becker
Ischiodontus simplex (LeConte)
Lanelater sallei LeConte
Melanotus fissilis (Say)
Neotrichophorus carolinensis Schaeffer

Helodidae

Cyphon variabilis Thunb.
Scirtes tibialis Guerin

Heteroceridae

Heterocerus pallidus Say
Heterocerus pusillus Say

Hydrophilidae

Enochrus consors LeConte
Enochrus consortus Green

Lycidae

Celetes basalis LeConte

Monommidae

Hyporhagus punctulatus punctulatus Thomson

Melyridae

Collops floridanus Schaeffer
Collops sp.

Noteridae

Sulphisellus puncticallis Cresson

Omophronidae

Omophron sp.

Ostomidae

Temnochila virescens (Fab.)

Scarabaeidae

Ataenius cognatus LeConte
Ataenius gracilis Melsh.
Ataenius simulator Harold
Aphodius granarius Linnaeus
Diplotaxis bidentata LeConte
Euparia?

Parastasia brevipes (LeConte)

Phyllophaga dispar (Burm.)

Strategus julianus Burm.

Scolytidae

Xyleborus xylographus Say

Silphidae

Silpha surinamensis Fab.

Staphylinidae

Carpelinus sp.

Hesperobium sp.

Lathrobium simplex LeConte

Lobrathium sp.

Philonthus cunctans Horn

Tenebrionidae

Gondwanocrypticus obsoletus (Say)

Cybotus estriatus (LeConte)

Epitragodes tomentosus (LeConte)

Hymenoptera — Bees, Wasps, Ants, et al.

Braconidae — Braconids

Lysiphlebus testaceipes (Cresson)

Microplitis varicolor Viereck

Rogas laphygmae Viereck

Scoliidae — Scoliid Wasps

Campsomeris plumipes fossulana (Fab)

CLASS ARACHNIDA*

Araneida — Spiders

Dictynidae — Dictynids

Dictyna sublata Hentz

Drassidae — Drassids

Gnaphosa sericata Koch

Linyphiidae — Sheet-web Weavers

Ceraticelus similis Banks

Erigone autumnalis Emerton

Araneidae — Typical Orb-weavers

Araniella displicata (Hentz)

Argiopidae — Orb-weavers

Tetragnatha caudata Emerton

Tetragnatha pallescens (Cambridge)

Tetragnatha sp.

*—Collected by Richmond and deposited in the American Museum of Natural History, N. Y.

Thomisidae — Crab-spiders

Misumenops celer Hentz

Tibellus duttonii Hentz

Clubionidae — Clubionids

Meriola decepta Banks

Lycosidae — Wolf-spiders

Arctosa sublata Montgomery

Lycosa antelucana Montgomery

Pardosa pauxilla Montgomery

Pardosa saxatilis Hentz

Attidae — Jumping-spiders

Pellenes coronatus Hentz

Phylum ECHINODERMATA

Class Holothuroidea

Cucumariidae

⁵*Thyone mexicana*

Class Asteroidea

Arbaciidae

¹⁰*Arbacia punctulata* (Lamarck)

Purple Sea Urchin

Phylum PROSOPYGIA

Class Ectoprocta

Vesiculariidae

⁵*Amathia convoluta* Lamouroux

Phylum CHORDATA

Subphylum Cephalochordata (Acrania)

Branchiostomidae

Branchiostoma floridae Hubbs Florida Lancelet, Amphioxus

Subphylum Craniata (Vertebrata)

Class Pisces

Subclass Chondrichthyes — Cartilaginous Fishes

Order Squaliformes

Carcharhinidae — Requiem Sharks

^{1/11}*Carcharinus leucas* (Müller and Henle)

Bull Shark

^{1/11}*Carcharinus limbatus* (Müller and Henle)

Blacktip Shark

¹⁶*Negaprion brevirostris* (Poey)

Lemon Shark

^{1/11}*Scoliodon terraenovae* (Richardson) Atlantic Sharpnose Shark

Sphyrnidae

^{15/16}*Sphyrna tiburo* (Linnaeus)

Bonnethead

Order Rajiformes (Batoidei)

Pristidae — Sawfishes

^{12/14}*Pristis pectinatus* Latham Common Sawfish

Torpedinidae — Electric Rays

^{14/15/17}*Narcine brasiliensis* (Olfers) Lesser Electric Ray

Rajidae — Skates

^{8/16}*Raja eglanteria* Bosc Skate, Brier Ray

¹⁷*Raja lentiginosa* Bigelow and Schroeder Freckled Skate

Dasyatidae

¹⁷*Dasyatis americana* Hildebrand and Schroeder Southern Stingray

¹⁷*Gymnura micrura* (Bloch and Schneider) Smooth Butterfly Ray

Subclass Osteichthyes — Bony Fishes

Order Seminotiformes

Lepisosteidae

¹⁶*Lepisosteus oculatus* (Winchell) Spotted Gar

Order Clupeiformes

Elopidae — Ladyfishes

¹⁶*Elops saurus* Linnaeus Ladyfish

Megalopidae — Tarpons

¹⁶*Megalops atlantica* Valenciennes Atlantic Tarpon

Clupeidae — Herrings

^{1/16}*Dorosoma petenense* (Günther) Threadfin Shad

Engraulidae

¹⁶*Anchoa mitchilli* (Valenciennes) Bay Anchovy

Order Cyprinodontiformes

Cyprinodontidae — Killifishes — Top Minnows

^{15/17}*Adinia xenica* (Jordan and Gilbert) Diamond Killifish

^{15/17}*Fundulus confluentus* Goode and Bean Marsh Killifish

¹⁶*Fundulus pulvereus* (Evermann) Bayou Killifish

Order Gadiformes

Gadidae — Codfishes

¹⁶*Urophycis floridanus* (Bean and Dresel) Southern Hake

Order Gasterosteiformes

Fistulariidae — Cornetfishes

⁴*Fistularia tabacaria* Linnaeus Cornetfish

Syngnathidae — Pipefishes, Seahorses

⁶*Syngnathus scovelli* (Evermann and Kendall) Scovell's Pipefish

Order Perciformes

Serranidae — Sea Basses

| | |
|--|----------------|
| ¹⁷ <i>Centropristes ocyurus</i> (Jordan and Evermann) | Bank Sea Bass |
| ⁴ <i>Centropristes philadelphicus</i> (Linnaeus) | Rock Sea Bass |
| ¹ <i>Diplectrum arcuarium</i> Ginsburg | Sandfish |
| ⁹ <i>Mycteroperca bonaci</i> (Poey) | Black Grouper |
| ⁸ <i>Mycteroperca phenax</i> (Jordan and Swain) | Scamp |
| ⁶ <i>Serraniculus pumilio</i> Ginsburg | Pigmy Sea Bass |

Lutjanidae — Snappers

| | |
|---|--------------|
| ¹⁷ <i>Lutjanus campechanus</i> | Red Snapper |
| ^{1/10} <i>Lutjanus synagris</i> (Linnaeus) | Lane Snapper |

Priacanthidae

| | |
|--|--------------|
| ¹⁷ <i>Pristigenys alta</i> (Gill) | Short Bigeye |
|--|--------------|

Pomatomidae — Bluefishes

| | |
|--|----------|
| ^{1/4} <i>Pomatomus saltatrix</i> (Linnaeus) | Bluefish |
|--|----------|

Carangidae — Jacks

| | |
|---|-------------|
| ⁴ <i>Alectis crinitis</i> (Mitchill) | Threadfish |
| ⁴ <i>Caranx hippos</i> (Linnaeus) | Common Jack |
| ¹⁶ <i>Caranx crysos</i> (Mitchill) | Blue Runner |
| ⁴ <i>Chloroscombrus chrysurus</i> (Linnaeus) | Bumper |

Pomadasyidae — Grunts

| | |
|--|---------|
| ^{1/14/18} <i>Orthopristis chrysopterus</i> (Linnaeus) | Pigfish |
|--|---------|

Sciaenidae — Drums

| | |
|---|-------------------|
| ¹¹ <i>Menticirrhus americanus</i> (Linnaeus) | Southern Kingfish |
| ¹⁸ <i>Stellifer lanceolatus</i> (Holbrook) | Star Drum |
| ¹⁷ <i>Cynoscion arenarius</i> Ginsburg | Sand Sea Trout |
| ¹⁷ <i>Cynoscion nothus</i> (Holbrook) | Silver Sea Trout |

Ephippidae — Spadefishes

| | |
|--|-----------|
| ¹² <i>Chaetodipterus faber</i> (Broussonet) | Spadefish |
|--|-----------|

Pomacentridae — Damselfishes

| | |
|--|----------------|
| ^{7/8} <i>Abudefduf saxatilis</i> (Linnaeus) | Sergeant Major |
|--|----------------|

Labridae — Wrasse

| | |
|--|----------------|
| ¹⁷ <i>Halichoeres radiatus</i> (Linnaeus) | Puddingwife |
| ¹¹ <i>Halichoeres caudalis</i> (Poey) | Painted Wrasse |
| ^{13/18} <i>Hemipteronotus novacula</i> (Linnaeus) | Razorfish |

Scombridae — Tunas, Mackerels

| | |
|--|------------------|
| ⁴ <i>Scomberomorus maculatus</i> (Mitchill) | Spanish Mackerel |
|--|------------------|

Xiphiidae — Swordfishes

| | |
|---|-----------|
| ¹⁴ <i>Xiphias gladius</i> Linnaeus | Swordfish |
|---|-----------|

Eleotridae — Sleepers

| | |
|---|--------------------|
| ^{15/16} <i>Eleotris pisonis</i> (Gmelin) | Spinycheck Sleeper |
|---|--------------------|

Gobiidae — Gobies

| | |
|---|--------------------|
| ^{4/17} <i>Gobioides broussonneti</i> Lacépède | Violet Goby |
| ¹⁶ <i>Gobionellus boleosoma</i> (Jordan and Gilbert) | Darter Goby |
| ¹ <i>Gobiosoma longipala</i> Ginsburg | Naked Goby |
| ¹⁷ <i>Gobiosoma</i> sp. | Goby |
| ¹⁶ <i>Gobiosoma bosci</i> (Lacépède) | Naked Goby |
| ¹ <i>Gobiosoma robustum</i> Ginsburg | Naked Goby |
| ¹⁶ <i>Microgobius gulosus</i> (Girard) | Large-mouthed Goby |
| ¹⁵ <i>Evorthodus lyricus</i> (Girard) | Lyre Goby |

Scorpaenidae — Rockfishes, Scorpionfishes

| | |
|--|---------------------------|
| ¹⁷ <i>Scorpaena dispar</i> Longley and Hildebrand | Hunchback Scorpionfish |
| ¹¹ <i>Scorpaena grandicornis</i> Cuvier | Lionfish |
| ^{11/17} <i>Scorpaena plumieri</i> Bloch | Scorpion Fish |

Triglidae

| | |
|---|-------------------|
| ¹⁷ <i>Prionotus martis</i> Ginsburg | Barred Searobin |
| ¹⁷ <i>Prionotus rubio</i> Jordan | Blackfin Searobin |
| ^{16/17} <i>Prionotus scitulus</i> Jordan and Gilbert | Slender Searobin |
| ¹⁷ <i>Prionotus tribulus</i> Cuvier | Bighead Searobin |
| ¹⁷ <i>Prionotus</i> sp. | Searobin |

Blenniidae — Combtooth Blennies

| | |
|--|-----------------|
| ⁴ <i>Hypsoblennius hentzi</i> (LeSueur) | Feather Blenny |
| ⁴ <i>Hypsoblennius ionthas</i> (Jordan and Gilbert) | Freckled Blenny |

Ophidiidae — Cusk-eels

| | |
|--|--------------------|
| ¹ <i>Lepophidium graellsii</i> (Poey) | Blackedge Cusk-eel |
| ¹ <i>Ophidion</i> sp. | Cusk-eel |
| ¹ <i>Ophidion welshi</i> (Nichols and Breder) | Crested Cusk-eel |
| ^{15/16} <i>Otophidium</i> sp. | Cusk-eel |

Sphyraenidae — Barracudas

| | |
|--|-----------------|
| ^{7/16} <i>Sphyraena barracuda</i> (Walbaum) | Great Barracuda |
| ^{15/16} <i>Sphyraena guachancho</i> Cuvier | Guachanche |

Order Pleuronectiformes

Bothidae — Lefteye Flounders

| | |
|--|--------------------|
| ¹⁷ <i>Ancylopersetta quadrocellata</i> Gill | Ocellated Flounder |
| ⁴ <i>Citharichthys macrops</i> Dresel | Spotted Whiff |
| ^{16/17} <i>Etropus crossotus</i> Jordan and Gilbert | Fringed Flounder |
| ⁴ <i>Syacium gunteri</i> Ginsburg | Gunter's Flounder |

Soleidae

| | |
|---|--------------------------|
| ¹⁷ <i>Achirus lineatus</i> (Linnaeus) | Lined Sole |
| ^{16/17} <i>Trinectes maculatus</i> Bloch and Schneider | Broad Sole, Hogchoker |

Order Echeneiformes

Echeneidae — Remoras

| | |
|--|-------------|
| ¹⁷ <i>Echeneis naucrates</i> Linnaeus | Sharksucker |
|--|-------------|

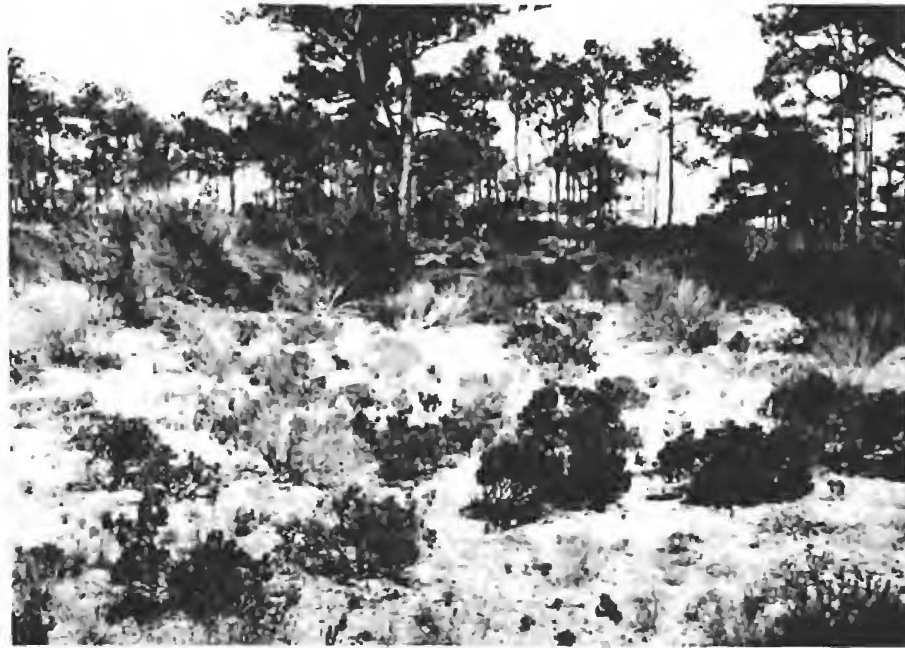


Figure 7. Typical scene of higher elevations in the interior of Horn Island (Slash Pine, Rosemary, Baccharis and Saw Palmetto)



Figure 8. Tracks of *Procyon lotor* in sand

Order Gobiesociformes

Gobiesocidae — Clingfishes

^{15/16}*Gobiosox strumosus* Cope Skilletfish

Order Tetraodontiformes

Balistidae — Filefishes, Triggerfishes

^{4/11}*Alutera schoepfi* (Walbaum) Orange Filefish

¹⁷*Balistes capricornis* Gmelin Gray Triggerfish

^{5/17}*Monacanthus ciliatus* (Mitchill) Fringed Filefish

^{1/11}*Monacanthus hispidus* (Linnaeus) Common Filefish

Tetraodontidae — Puffers

¹⁷*Sphaeroides nephelus* (Goode and Bean) Southern Puffer

Ostraciidae — Trunkfishes

^{2/11}*Lactophrys quadricornis* (Linnaeus) Cowfish

Order Batrachoidiformes

Batrachoididae — Toadfishes

²*Opsanus beta* (Goode and Bean) Toadfish, Oyster Dog

^{15/16}*Porichthys porosissimus* (Cuvier) Atlantic Midshipman

Order Lophiiformes

Antennariidae — Frogfishes

^{13/16}*Antennarius radiosus* Garman Singlespot Frogfish

⁴*Histrio histrio* (Linnaeus) Sargassum Fish

Ogcocephalidae — Batfishes

¹⁷*Ogcocephalus vespertilio* (Linnaeus) Longnose Batfish

⁶*Ogcocephalus* sp. Batfish

The numbers preceding the species indicate by whom the collection was made. Numbers 1, 2 and 3 are identical with the numbers used in my 1962 paper. The remainder refer to other collectors or references as follows: 4. Gulf Coast Research Laboratory; 5 C. E. Dawson; 6. H. Shoemaker (1955); 7. A. Myrberg; 8. H. T. Boschung; 9. Rohr, Ford and Brewster; 10. W. Demoran; 11. J. Y. Christmas; 12. W. Walley; 13. Gordon Garwood; 14. Wayne Watkins; 15. James B. Ward; 16. James Franks; 17. Gordon Gunter—unpublished data.

Class Amphibia — The Frogs, Toads, Salamanders

Hylidae

Hyla crucifer crucifer Wied.

Hyla femoralis Latreille

Hyla gratiosa LeConte

Pseudacris nigrata nigrata LeConte

Pseudacris ornata (Holbrook)

Sceloporus undulatus undulatus Latreille

Class Reptilia — The Reptiles

Testudinata — Turtles

Chelydridae

| | |
|---|------------------------|
| ³ <i>Chelydra serpentina serpentina</i> (Linnaeus) | Common Snapping Turtle |
|---|------------------------|

Class Aves — Birds

Colymbidae — Grebes

| | | |
|---|--------------|---|
| ⁵ <i>Colymbus auritus</i> Linnaeus | Horned Grebe | W |
|---|--------------|---|

Ardeidae — Herons and Bitterns

| | | |
|---|-----------------------|---|
| ³ <i>Ardea occidentalis occidentalis</i> Audubon | Great White Heron | T |
| ⁵ <i>Botaurus lentiginosus</i> (Baclett) | American Bittern | S |
| ⁵ <i>Ardeola ibis ibis</i> (Linnaeus) | Cattle Egret | S |
| ^{1/3} <i>Dicromanassa rufescens rufescens</i> (Gmelin) | Reddish Egret | P |
| ^{3/5} <i>Florida caerulea caerulea</i> (Linnaeus) | Little Blue Heron | S |
| ¹ <i>Ixobrychus exilis exilis</i> (Gmelin) | Eastern Least Bittern | W |

Anatidae — Swans, Geese and Ducks

| | | |
|---|--------------------|---|
| ^{3/5} <i>Anas strepera</i> Linnaeus | Gadwell | W |
| ⁵ <i>Charitonetta albeola</i> (Linnaeus) | Bufflehead | W |
| ⁵ <i>Glaucionetta clangula americana</i> (Bonaparte) | American Goldeneye | W |
| ³ <i>Lophodytes cucullatus</i> (Linnaeus) | Hooded Merganser | W |
| ⁵ <i>Melanitta perspicillata</i> (Linnaeus) | Surf Scoter | M |
| ⁵ <i>Mergus merganser merganser</i> Cassin | American Merganser | W |
| ⁵ <i>Perissonetta collaris</i> (Donovan) | Ring-necked Duck | W |
| ⁵ <i>Spatula clypeata</i> (Linnaeus) | Shoveler | M |

Rallidae — Gallinules and Rails

| | | |
|---|------------|-----|
| ⁴ <i>Laterallus jamaicensis jamaicensis</i> (Gmelin) | Black Rail | M,W |
| ^{3/5} <i>Porzana carolina</i> (Linnaeus) | Sora Rail | T,W |

Charadriidae — Plovers, Turnstones and Surfbirds

| | | |
|---|--------------------|---|
| ^{1/5} <i>Charadrius alexandrinus tenuirostris</i> (Lawrence) | Cuban Snowy Plover | S |
|---|--------------------|---|

Scolopacidae — Woodcocks, Snipes and Sandpipers

| | | |
|--|-------------------|---|
| ³ <i>Erolia maritima</i> (Brünnich) | Purple Sandpiper | T |
| ^{1/5} <i>Limnodromus griseus griseus</i> (Gmelin) | Eastern Dowitcher | T |

Laridae — Gulls and Terns

| | | |
|---|--------------------|---|
| ³ <i>Rissa tridactyla tridactyla</i> (Linnaeus) | Atlantic Kittiwake | T |
| ⁵ <i>Thalasseus sandvicensis acuflavidus</i> (Cabot) | Cabot Tern | S |

Columbidae — Pigeons and Doves

| | | |
|--|-------------------------|---|
| ³ <i>Columba livia livia</i> Gmelin | Rock or Domestic Pigeon | W |
| ⁵ <i>Zenaida asiatica asiatica</i> (Linnaeus) | White-winged Dove | T |

Tytonidae

| | | |
|--|----------|---|
| ⁶ <i>Tyto alba pratincola</i> (Bonaparte) | Barn Owl | P |
|--|----------|---|

| | | | |
|---|-------------------------------|-------|--|
| Caprimulgidae — Goatsuckers | | | |
| ^{1/3/5} <i>Caprimulgus carolinensis</i> Gmelin | Chuck-will's Widow | W | |
| ³ <i>Caprimulgus vociferus vociferus</i> Wilson | Eastern Whippoorwill | T | |
| Trochilidae — Hummingbirds | | | |
| ^{3/5} <i>Archilochus colubris</i> (Linnaeus) | Ruby-throated Hummingbird | M,T | |
| Picidae — Woodpeckers | | | |
| ³ <i>Dendrocopos pubescens pubescens</i> (Linnaeus) | Southern Downy Woodpecker | P | |
| ³ <i>Melanerpes erythrocephalus</i> (Linnaeus) | Eastern Red-headed Woodpecker | P,V,S | |
| Tyrannidae — Flycatcher | | | |
| ³ <i>Empidonax minimus</i> (Baird and Baird) | Least Flycatcher | M | |
| Corvidae — Crows and Jays | | | |
| ³ <i>Corvus ossifragus</i> Wilson | Fish Crow | P | |
| ³ <i>Cyanocitta cristata cristata</i> (Linnaeus) | Southern Blue Jay | P | |
| Paridae — Titmice | | | |
| ³ <i>Penthestes carolinensis guilloti</i> Oberholser | Louisiana Chickadee | P | |
| Troglodytidae — Wrens | | | |
| ³ <i>Telmatodytes palustris palustris</i> (Wilson) | Long-billed Marsh Wren | P | |
| ³ <i>Nannus troglodytes hiemalis</i> (Vieillot) | Eastern Winter Wren | W | |
| Mimidae — Mockingbirds and Thrashers | | | |
| ³ <i>Toxostoma rufum rufum</i> (Linnaeus) | Brown Thrasher | M,W | |
| Vireonidae — Vireos | | | |
| ³ <i>Vireo sylvia gilva gilva</i> (Vieillot) | Eastern Warbling Vireo | M | |
| Parulidae — (Compsothlypidae) — Wood Warblers | | | |
| ³ <i>Dendroica caerulescens</i> (Gmelin) | Black-throated Blue Warbler | M | |
| ³ <i>Seiurus motacilla</i> (Vieillot) | Louisiana Waterthrush | S | |
| ³ <i>Wilsonia citrina</i> (Boddaert) | Hooded Warbler | M,S | |
| Icteridae — Meadowlarks, Blackbirds and Oriole | | | |
| ^{1/3/5} <i>Icterus spurius</i> (Linnaeus) | Orchard Oriole | S,M | |
| ⁵ <i>Icterus galbula</i> (Linnaeus) | Baltimore Oriole | M | |
| ³ <i>Sturnella magna argutula</i> Bangs | Southern Meadowlark | W,T | |
| Thraupidae — Tanagers | | | |
| ^{1/3/5} <i>Piranga olivacea</i> (Gmelin) | Scarlet Tanager | M | |
| ^{3/5} <i>Piranaga rubra rubra</i> (Linnaeus) | Summer Tanager | M,T | |
| Fringillidae — Grosbeaks, Finches, Sparrows and Buntings | | | |

- ^{2/1}*Passerina ciris ciris* (Linnaeus) Painted Bunting M,W
³*Zonotrichia albicollis* (Gmelin) White-throated Sparrow M,W

Additions by the following observers to the 1962 list, published in Volume 1 (no.2) of the Gulf Research Reports.

1. E. A. Richmond; 2. J. R. Walther; 3. W. I. Anderson; 4. K. E. Myers; 5. J. Blackard; 6. D. Peterson; 7. F. Carroll.

M = Migrant, P = Permanent resident, S = Summer resident, T = Transient or winter visitant, V = Summer visitant, W = Winter resident.

Class Mammalia — The Mammals

Order Chiroptera — Bats

Vespertilionidae — Vespertilionid — Bats

Myotis lucifugus lucifugus (LeConte) Little Brown Myotis

Order Rodentia — Rodents

Capromyidae — Nutrias and Coypus

Myocastor coypus bronariensis

(E. Geoffrey St. — Hilaire) Coypus

Muridae

Mus musculus (Linnaeus) House Mouse

FLORA

THALLOPHYTA

Phaeophyta — Brown Algae

Dictyotaceae

²*Dictyota dichotoma* (Hudson) Lamouroux Dictyota

Ectocarpaceae

Ectocarpus confervoides (Roth) LeJod. Ectocarpus

²*Ectocarpus siliculosus* (Dillwa.) Lyngb. Ectocarpus

Sargassaceae

²*Sargassum fluitans* Borgesen Sargassum

²*Sargassum natans* (Linnaeus) Sargassum

Charophyta — Brittleworts

Characeae

²*Chara* sp. Chara

Chlorophyta — Green Algae

Caulerpaceae

²*Caulerpa prolifera* (Forsk.) Lamouroux Caulerpa

Cladophoraceae

²*Chaetomorpha gracilis* Kützing Chaetomorpha

| | |
|---|------------------------|
| ² <i>Cladophora blomquistii</i> Aziz and Humm | Cladophora |
| ² <i>Cladophora gracilis</i> (Griffiths) Kütz. | Cladophora |
| <i>Ulvaceae</i> | |
| <i>Enteromorpha prolifera</i> (Müll.) J. Ag. | Enteromorpha |
| <i>Rhodophyta</i> — Red Algae | |
| <i>Ceramiales</i> | |
| ² <i>Spyridia filamentosa</i> (Wulfen) Harvey | Spyridia |
| <i>Champiaceae</i> | |
| ² <i>Champia parvula</i> (C. Agardh) Harvey | Champia |
| <i>Chantransiaceae</i> | |
| ² <i>Acrochaetium seriatum</i> Borgesen | Acrochaetium |
| <i>Gracilariaceae</i> | |
| ² <i>Gracilaria verrucosa</i> (Hudson) Papenfuss | Gracilaria |
| <i>Hypneaceae</i> | |
| ² <i>Hypnea musciformis</i> (Wulfen) Lamouroux | Hypnea |
| <i>Rhodomelaceae</i> | |
| ² <i>Chondria baileyana</i> (Montague) Harvey | Chondria |
| ² <i>Chondria cnicophylla</i> (Melvill) De Toni | Chondria |
| ² <i>Chondria littoralis</i> Harvey | Chondria |
| ² <i>Laurencia poitei</i> (Lamouroux) Howe | Laurencia |
| <i>Cyanophyta</i> — Bluegreen Algae | |
| <i>Myxophyceae</i> | |
| ² <i>Dichothrix penicillata</i> Zanardini | Dichothrix |
| <i>Pteridophyta</i> | |
| <i>Osmundaceae</i> | |
| <i>Osmunda regalis</i> Linnaeus | Royal Fern |
| <i>Spermatophyta</i> | |
| <i>Gramineae</i> | |
| <i>Andropogon maritimus</i> Chapman | Seaside Broom Grass |
| ⁵ <i>Aristida spiciformis</i> Elliott | "Spike-like" Awn Grass |
| <i>Cynodon dactylon</i> (Kuntze) | Bermuda Grass |
| <i>Distichlis spicata</i> (Linnaeus) Greene | Spike-grass |
| [*] <i>Echinochla</i> (<i>Panicum</i>) <i>crus-galli</i> (L.) Beauvoir | Barnyard-grass |
| <i>Cyperaceae</i> | |
| <i>Elocharis acicularis</i> (L.) R. + S. | |
| <i>Fimbristylus spadicea</i> (L.) Vahl. | Chestnut-colored Sedge |
| (Plants previously identified as <i>F. Harperi</i> and <i>F. castanea</i>) | |

*—Listed previously but generic name changed 2. Collected by R. B. Channell (1966); 4. collected by S. M. Tracy (1898-1903); 5. collected by D. L. Diener (1953). Unnumbered species collected by Richmond (1962-1966). Deposited in the Bailey Herbarium at Cornell University or at the Philadelphia Academy of Natural Sciences.

are probably *F. spadicea* according to A. E. Schuyler)
⁶*Fuirena scirpoides* Michx. Umbrella-grass

Xyridaceae

Xyris flabelliformis Chapman Flabellate Yellow-eyed grass

Haemodoraceae

Lacnanthes tinctoria (Walt.) Ell. Red Root

Amaryllidaceae

Allium canadense Linnaeus Wild Garlic

Iridaceae

⁴*Sisyrinchium atlanticum* Bicknell Atlantic Blue-eyed Grass

⁴*Sisyrinchium nanum* Bicknell Blue-eyed Grass

Orchidaceae

Spiranthes floridana Wherry Ladies Tresses

Polygonaceae

**Polygonella gracilis* (Nutt.) Meisner Slender Jointweed

(Same as *Delopyrum gracilis* Nutt.)

Polygonum opelousanum Riddell Opelousas Smartweed

Amaranthaceae

Achyranthes philoxeroides (Mart.) Standley Chaff Flower

Capparidaceae

**Polanisia tenuifolia* Torrey & Gray Caper

Cruciferae

Cakile fusiformis Greene Cakile

Lepidium virginicum Linnaeus Poor-man's Pepper

Rosaceae

Rubus mississippianus Bailey Southern Dewberry

(Listed previously as *R. trivialis* (Michaux))

Oxalidaceae

Xanthoxalis filipes Small Slender-stalked Oxalis

Euphorbiaceae

Euphorbia cordifolia (Ell.) Small Spurge

Euphorbia sp. Spurge

Malvaceae

Kosteletzyka virginica (L.) Presl. Seashore-mallow

Kosteletzyka althaeifolia (Chap.) A. Gray Seashore-mallow

Cistaceae

Helianthemum arenicola Chapman Sanddune Frostweed

Helianthemum canadense (L.) Michaux Frostweed

Helianthemum georgianum Chapman Rock Rose

Lechea tenuifolia Michaux Rock Rose

| | | |
|--|--|-------------------------|
| <i>Violaceae</i> | | |
| <i>Viola vittata</i> Greene | | White Violet |
| <i>Melastomataceae</i> | | |
| <i>Rhexia alifanus</i> Walt. | | Meadow-beauty |
| <i>Cornaceae</i> | | |
| <i>Svida stricta</i> Lamarck (Small) | | Lamarck's Dogwood |
| <i>Umbelliferae</i> | | |
| <i>Ptilimnium capillaceum</i> (Michaux) Ref. | | Mock's Bishop's Weed |
| <i>Ericaceae</i> | | |
| <i>Vaccinium Darrowi</i> Camp | | Darrow's Blueberry |
| <i>Primulaceae</i> | | |
| <i>Centrunculus minimum</i> Linnaeus | | Small's Chaffweed |
| <i>Convolvulaceae</i> | | |
| <i>Ipomoea sagittata</i> Cav. | | Sagittate Morning-glory |
| <i>Scrophulariaceae</i> | | |
| <i>Linaria floridana</i> Chapman | | Florida Toadflax |
| <i>Lentibulariaceae</i> | | |
| <i>Pinguicula lutea</i> Walter | | Yellow Butterwort |
| <i>Utricularia subulata</i> Linnaeus | | Awl-shaped Bladderwort |
| <i>Compositae</i> | | |
| <i>Cirsium horridulum</i> Elliotti | | Purple Thistle |
| (Forma Elliotti (T. & G.) Fernald) | | |
| ⁴ <i>Coreopsis corninsularis</i> Sherff | | Horn Island Tick-seed |
| <i>Erechtites hieracifolia</i> (L.) Raf. | | Pilewort, Fireweed |
| <i>Helenium amarum</i> (Rab.) H. Rock | | Sneezeweed |

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Figure 9. From Gulf to North (Section 29)



Figure 10. Looking West — last of trees — near Section 24

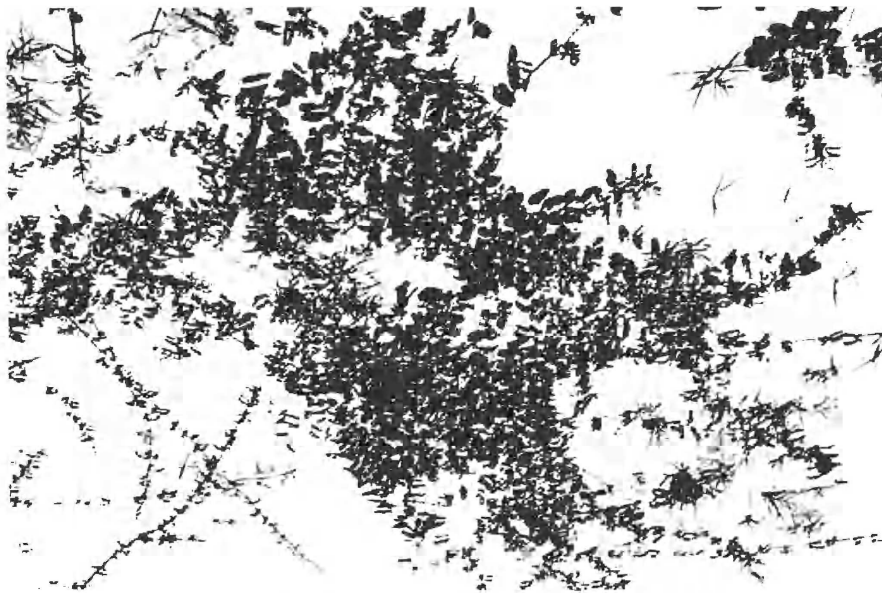


Figure 11. *Euphorbia cordifolia* (Ell.) Small — Spurge



Figure 12. *Opuntia humifusa* Raf. — Rafinesque's Prickly Pear

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CORRIGENDA

Of

"The Fauna and Flora of Horn Island, Mississippi,"
(Gulf Research Reports, Volume 1, No. 2, pp. 59-106, 1962)

- p. 62, line 1: Fields = Field
- p. 70, line 37: *Andara* = *Anadara*
- p. 71, line 36: *Marcrocallista* = *Macrocallista*
- p. 74, line 23: *Malacostra* = *Malacostraca*
- p. 74, line 30: *Taylorchestia longicornis* = *Talorchestia* sp.
- p. 74, line 43: *ocessatus* = *ocellatus*
- p. 75, line 7: *Emargonarta* = *emarginata*
- p. 78, line 4: *Lygus apicalis* Fieber = *Taylorilygus pallidulus* Blanchard
- p. 78, line 19: *Pangaeus bilineatus* (Say) = *Cydnidae*
- p. 78, line 40: *Graminella nigrifrons* = Delete "Probably *fascifrons* (Stål)"
- p. 78, line 43: *Macrosteles divisus* (Uhler) = *M. fascifrons* (Stål)
- p. 80, line 15: *Crambus* sp. = Place in Crambidae
- p. 81, line 11: *canithorax* = *mississippiensis* Hoffman
- p. 83, line 8: (Fall) = (Fall.)
- p. 83, line 39: *Dorilas* sp. = *Pipunculus*
- p. 83, line 46: Genus? = belongs under *Rhagionidae*
- p. 87, line 7: *serialis* = *seriata*
- p. 87, line 10: *Sylvanus* = *Silvanus*
- p. 88, line 26: *Photuris pennsylvanica* (DeGeer) = probably *P. versicolor* (Fab.) per McDermott

- p. 90, line 22: *Dorymymex* = *Dorymyrmex*
- p. 91, line 15: Delete and use *Linyphiidae* - Linyphiids
- p. 92, line 5: Urochorda = Urochordata
- p. 93, line 10: *Carnax* = *Caranx*
- p. 93, line 26: *Micropogen* = *Micropogon*
- p. 94, line 14: *albiguttus* = *albigutta*
- p. 94, line 15: *lethostigmus* = *lethostigma*
- p. 96, line 7: Gannet = *Sulidae*. Insert on p. 95 after *Pelecanidae*
- p. 96, line 43: Black bellied = hyphenate
- p. 97, line 35: Kingbord = Kingbird
- p. 98, line 5: *Hylochichla* = *Hylocichla*
- p. 99, line 23: *Mus* = *Rattus*, Author of species = (Berkenhout)
- p. 100, line 9: Bitter Beachgrass
- Fig. 26, line 2: groundsell = groundsel
- p. 101, line 31: *carymbosa* = *corymbosa*
- p. 102, line 35: Rafinewque's = Rafinesque's
- p. 103, line 12: stellaria = stellaris
- p. 104, line 2: Thistle = Actinospermum
- p. 104, line 4: Groundsell = Groundsel
- p. 104, line 10: recurring = recurving
- p. 105, line 20: 1946 = 1956

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Seasonal Occurrence of the Pelagic Copepoda in Mississippi Sound

by

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ABSTRACT

Collections of planktonic copepods from Mississippi Sound were made from January 1965 to March 1966. The following fifteen free-living copepods were identified: *Eucalanus pileatus*, *Paracalanus parvus*, *Centropages hamatus*, *Centropages furcatus*, *Temora stylifera*, *Temora longicornis*, *Labidocera aestiva*, *Labidocera* species, *Acartia tonsa*, *Oithona brevicornis*, *Oithona* species, *Oncaea venusta*, *Corycaeus* species, *Sappharina nigromaculata* and *Euterpina acutifrons*.

It was found that there is a definite seasonal distribution of copepods in Mississippi Sound with peak populations of copepods occurring in the spring, summer and fall.

INTRODUCTION

The copepods have a vital role in the economy of the sea. Clarke (1957) referred to them as "key industry animals," thus indicating that they act to convert the phytoplankton into a form of food available to larger animals in the environment that are not able to feed directly on the phytoplankton. Knowledge of the abundance and seasonal occurrence of the copepods is of fundamental importance.

The literature published on copepods of the Gulf of Mexico is sparse. Herrick (1887) published a list of a number of copepods collected from the northern Gulf Coast. His investigations extended from the west coast of Florida to the Gulf Coast of Alabama. Foster (1904) reported on the copepods collected from the area around the Gulf Biologic Station in Louisiana. King (1949) published a list of species taken in a ten-month survey of the west coast of Florida. Davis (1949) also published a composite and updated list of the copepods collected from a number of stations located on both the east and west coasts of Florida, which included both marine and brackish water forms. Jones (1952) conducted a preliminary survey of copepods from the Florida Current. His work included notes on the seasonal distribution and vertical distribution of the copepods in that region. Owre (1962) compiled a composite list of 129 species of copepods which were found in the Florida Current. This list was amend-

ed by Owre and Foyo (1964) and 45 species were added to the original list, making a total of 174 species of copepods identified from the Florida Current. Owre and Foyo (1967) published an illustrated key to the copepods found in the Florida Current. Schmidt (1954) reviewed all studies of copepods of the Gulf of Mexico and estimated "that close to a hundred free-swimming copepods, representative of some 70 genera, have to date been taken in the Gulf of Mexico and brackish waters adjacent thereto." Grice (1956) conducted a qualitative and quantitative seasonal study of the copepods of Alligator Harbor, Florida. Fleminger (1957) and Grice (1960) reported on various specific genera and added several new species to the ever growing list of species found in the Gulf of Mexico. Gonzalez (1957) reported on the seasonal distribution of the copepods of the Mississippi Delta region. Hopkins (1966) listed several copepods taken in the St. Andrew Bay System, Florida, with notes on their seasonal occurrence there. Woodmansee (1958) reported on a study of the seasonal distribution of the zooplankton off Chicken Key in Biscayne Bay, Florida, and Richmond (1962) listed one species of copepod collected near the beach of Horn Island in the Mississippi Sound.

The purposes of this investigation were to determine: (1) the quantitatively important species of copepods in the Mississippi Sound region of the Northern Gulf of Mexico; and (2) the relative abundance of each species through the course of a year.

DESCRIPTION OF THE MISSISSIPPI SOUND

According to Moore (1961), Mississippi Sound is an elongated body of water partially enclosed by a series of barrier islands. The Sound is approximately eighty miles long by ten miles wide, with an average depth of about ten feet (Figure 1). The axis of the sound is almost due east and west. The eastern boundary is the eastern end of Dauphin Island, near the lower end of Mobile Bay, and the western end terminates at Grand Island, Louisiana. Moore (1961) stated that the bottom is mud, but this is replaced by sand close to the barrier islands and in some places along the mainland. The eastern one-third of the Mississippi Sound lies in Alabama.

The major fresh water entry into Mississippi Sound is the Pascagoula River which empties into the Sound near the Alabama-Mississippi border, and the Pearl River which flows into the Sound about four miles west of Grand Island. In addition to these two rivers, fresh water flows into the Sound through Biloxi Bay and the Bay of St. Louis. Biloxi Bay is supplied with fresh water by the Biloxi River, the Tchouticabouffa River, Old Fort Bayou and Bernard Bayou. The Bay of St. Louis is supplied by the Jourdan and Wolf Rivers.

MATERIALS AND METHODS

Field Procedure

Once each month through the period January 1965 to March 1966, zooplankton collections were made at 10:00 A. M. All of these collections were made at a station located in Mississippi Sound, lying in Latitude 30° 17' N. and Longitude 88° 45' W. (Figure 1).

Each collection was made by towing a Clarke-Bumpus quantitative plankton sampler (Clarke and Bumpus 1940 and 1950) four times